INTERNATIONAL BULLETIN

OF PLANT PROTECTION

1932 No. 1.

DISCOVERIES AND CURRENT EVENTS *

North Africa : Desert Locusts *(Schistocerca gregaria)* (1).

Swarms reported during November 1931 :—

Numbers of large swarms from 18 October to 5 November over the valley of Igharghar, between Tifdest and Amguid, flying from south-east to north-east.

On 1 November a small swarm over the palm plantation of Djanet, flying from south to north.

On the 4th a large swarm over Kadoussa on the Algeria-Morocco frontier, flew north-east.

On the 5th a swarm over Tisgui Ida ou Balloul (36 km south of Igherm, Morocco).

On the 9th a swarm at Tazzoughourt (20 km west-north-west of Bou-Denib) flying west.

On the 12th a small swarm alighted at Chellala des Adaouras (Mixed Commune of Sidi-Aïssa).

On the 16th a large swarm coming from the frontier passed over Foum El Kaous N'Tazoult (Circle of Ouarzagat, Morocco) flying west.

On the 19th a swarm was reported over the post of Flatters coming from the south-west.

On the 19th a large swarm coming from Foum Meskaou followed up the Oued Aqqa and passed Tisgui Ida or Balloul (36 km south of Igherm). A large part flew towards Igounan (72 km south-west of Igherm). The rest alighted at Ahl Tizzert (30 km south of Igherm).

On the 22nd a smaller swarm, 3 km by 1.5, alighted in the division of Aïn Semmug des Sektana (85 km east of Taroudant).

On the 22nd a large swarm alighted at Ahl Aglou, Oued Massa, Chtouka from the west and remained there. On the 24th it flew away and passed over Tiznit in a south-easterly direction.

On the 23rd a very dense swarm alighted in the dunes 10 km south-west of Agadir.

On the 24th swarms passed 3 km south of Immouzer in the tribe of Ida ou Tanant (35 km east-north-east of Immouzer).

On the 25th a large swarm reported the day before over Tiznit alighted at Ouled Djerar (25 km south of Tiznit).

A swarm 8 km in length on the 25th and 27th flew over Tirjou, Bigoudine, coming from the south and alighted 35 km east-north-east of Immouzer.

Another swarm 8 by 4 km alighted on the 28th in the tribe of Ida ou Tanant.

* In this, as in the next two chapters the countries are arranged in French alphabetical order

(1) Communication from the Direction of the Economic Services (1st Bureau : Agriculture), General Government of Algeria, Algiers.

Egypt: The Onion White Rot Disease (1).

In February 1929, the Mycological Division of the Ministry of Agriculture, Egypt, received a specimen of diseased onions from Beni-Mazar in Lower Egypt. On examination this specimen has found to be infected with the ' White Rot Disease ' caused by *Sclerotium cepivorum*. Consequently a thorough survey was made in order to find out the extent of the distribution of this disease in Upper Egypt specially in Beni-Suef, Girga, Minia and Quena Provinces. The disease was, however, present in a part of the Minia Province where 1238 feddans were inspected, of which only 113 feddans were found infected, and all of these were scattered in the two districts of Maghagha and Beni Mazar. The actual diseased area among these 113 feddans only amounted to approximately 8 feddans. In other words, the infected area in Upper Egypt only amounted to 0.5 % of the onion growing area, and the actually diseased area to 0.04 % of the onion growing area of Upper Egypt or 0.02% of the total onion growing area of the whole of Egypt.

In April 1931 a careful watch was kept for any diseased onions arriving at the port of Alexandria for export. Onions were inspected at the Railway Station and the merchants' yard, but especial care was devoted to the onions as they passed through the grading machines. Although a very great quantity of onions were inspected carefully in this way no case of the ' White Rot ' was found.

It therefore appears that the disease is at present confined to a very small area in Upper Egypt and that it does not find its way into the export crop.

A poster giving an illustration of the disease and advice to the cultivators as to how to avoid its spread is in course of preparation.

A full account of the disease, its distribution in Egypt and control measures to be taken, has been prepared and will shortly be issued in Bulletin No. 107.

Eritrea: Locusts *(Locusta migratorioides* and *Schistocerca gregaria)* (2).

On 3 and 4 November 1931 two swarms of desert locust, *Schistocerca gregaria* were reported in the western plain in the territories of Agordat and Barentù.

On the upland plateau swarms of *Locusta migratorioides* from the Tigrai penetrated into Eritrean territory early in the month. After passing over the Seraè, Acchelè Guzai and Hamasien they flew in the direction of the eastern plain.

Numbers of swarms were also reported along the Red Sea coast. On 4 and 6 November desert locusts from the Agambussa crossed the plain of the Damas flying north-west.

On 7 November some locusts of unspecified colour and species alighted on Mount Debremahar, east of Salamona.

On 6, 7 and 8 November swarms flying in a northerly direction were observed at Salamona, along the Lebca stream and at Mersa Gulbub.

On 13 November a large swarm coming from the Agamè across the Abyssinian frontier alighted in the districts of Degghien, Uogherà, Lalai Agruf and Senafè; on 14 November it passed over Adi Caièh.

On 15 November numerous locusts damaged certain fields of ' bultuc ' at Mersa Teclai and next day took flight again in the direction of the sea. On 16th

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(1) Communication from the official correspondent of the Institute, Mr. E. BALLARD, Chief Plant Pathologist, Plant Protection Section, Ministry of Agriculture, Giza, Egypt.

(2) Communication from the official correspondent of the Institute, Dr. A. DE BENEDICTIS, Chief of the Agricultural Office of Eritrea, transmitted by the Government of the Colony.

locusts were observed at Carora coming from the Anglo-Egyptian Sudan and flying south-west.

In the first decade of the month small groups of desert locust laid eggs in fields near Zenabzera (Uschiro) ; the eggs were immediately collected and destroyed by natives.

Hoppers were not reported in any territory of the Colony.

It should be noted that during November last year a large part of the swarms were still moving about the upland plateau and only small groups had reached the eastern plain. The locusts that are there will remain until they reach sexual maturity, when copulation will take place and eggs will be laid which will produce the spring generation.

United States of America : The Spread of Some Introduced Diseases of Trees (1).

The chestnut blight has, of course, reached the limit of commercial range of the chestnut. Occasionally, however, new infections are found on more or less isolated trees or in nurseries. Recently the disease has been found in native trees in Indiana and Kentucky.

The white pine blister rust has been found on Rubus species in Maryland, Virginia, West Virginia and Ohio. Immature rust cankers on pines have also been found in Maryland and Iowa.

Following the discovery of the Dutch elm disease in Ohio in 1930, intensive search was made in Ohio during the summer of 1931, and, as a result of the general interest in this disease, a large number of specimens from other States were sent in for identification, not only by State and Federal Pathologists but by amateurs. Only 4 additional trees, all in Cleveland, Ohio, were found infected with the Dutch elm disease, but the examination of material in the search for it brought to light a hitherto undescribed disease of elms. This disease, the symptons of which somewhat resemble those of the Dutch elm disease, is caused by a quite different fungus the specific name of which has not yet been determined.

United States of America: The Distribution of Strawberry Dwarf caused by *Aphelenchus fragariae* (1).

The question of the distribution of strawberry dwarf caused by *Aphelenchus fragariae* has been recently given a degree of attention out of proportion to the commercial importance of the disease. The disease has long been common in the southeastern states from North Carolina to Louisiana. It was first definitely reported in 1905 in South Carolina. In the spring of 1930, a number of plants of a susceptible variety, many of which bore the disease, are known to have been shipped to various growers in the northern states outside the previously known range of the disease. Advantage was taken of this to determine the probable spread of the disease. In a survey made during 1930 and 1931, careful inspection was made of plantings where strawberries from the infected region had been established with the following results.

(1) Communication from the official correspondent of the Institute, Dr. Neil E. Stevens, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

The disease apparently failed to develop even on the recently imported plants in New Jersey, New York, Ohio, Kentucky, Indiana, Michigan, Minnesota, as well as northern Illinois and northern Pennsylvania. The disease was found to have persisted in introduced plants but not to have spread to other varieties in Maryland, Delaware, southern Pennsylvania and southern Illinois. In eastern Massachusetts the causal nematode was found both in the recently imported plants and in a few plants of a variety long grown in the states, but they apparently caused no disease symptoms.

Finland : Mites of the Hazel (1).

In the course of a study of the mites attacking hazels (*Corylus Avellana* L.) it has been found that all the species previously described as injurious to the hazel (*Eriophyes avellanae* Nal., *E. vermiformis* Nal., *Phyllocoptes comatus* Nal., *Oxypleurites depressus* Nal., *Anthocoptes loricatus* Nal.) occur in Finland.

A species not previously described, *Phyllocoptes coryli* Liro, has also been discovered. This species hibernates like the others in the buds of the host plant, but causes also malformations in the male flowers. These malformations, although occurring frequently in Europe (Finland, Germany, Austria, England, France, Italy, etc.) have hitherto been attributed to *Eriophyes avellanae.*

The species of *Phyllocoptes*, *Oxypleurites* and *Anthocoptes* living on the exterior of the host plant have been accused of producing a brown coloration of the attacked leaves. But it would appear that all these species, and *Phyllocoptes comatus* in particular, are so common that they must be found also on the browned leaves if for any reason they are examined.

Latvia : Plant Diseases Observed in 1931 (2).

Field crops. — In the spring of 1931 a wilt of rye seedling plants was observed, caused by *Fusarium nivale*, which rendered necessary the re-sowing of a great part of the rye crop. Rye was also attacked by brown leaf rust (*Puccinia dispersa*) and black rust (*P. graminis*) and produced a poor crop. The black rust made its appearance on rye and other hosts particularly in districts where the barberry has not yet been eradicated. In certain regions (Sigulda, Jelgava) there have been complaints concerning local epidemics of *Erysiphe graminis* on spring barley. The barley was also attacked more than in the preceding year by dwarf rust (*P. simplex*). Crown rust (*P. coronifera*) was observed on oats everywhere and in parts where *Rhamnus cathartica* is widespread even caused breaking of the straw.

Potato disease (*Phytophthora infestans*) was more or less serious.

Tree fruits and vegetables. — Certain nursery plantations are seriously infected by *Pseudomonas tumefaciens.*

Cronartium ribicola caused serious losses of black currants.

Tomatoes have been attacked by several fungus diseases. *Cladosporium fulvum*, which had previously been observed only under glass, spread into the fields. *Septoria Lycopersici* has frequently caused serious damage. *Botrytis cinerea* has caused injury to the fruits and fruit stalks under glass.

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(1) Communication from the official correspondent of the Institute, Prof. J. Ivar Liro, Director of the Plant Diseases Section of the Agricultural Experiment Institute, Helsinki.

(2) Communication from the official correspondent of the Institute, Prof. M. Eglits, Director of the Phytopathological Laboratory of the University, Riga.

Lettuces were seriously attacked by *Bremia Lactucae* under glass.

Cucumbers in frames and in the open were badly damaged by *Colletotrichum lagenarium*.

Ornamental plants. — The following fungi attacking ornamental plants have been observed for the first time in Latvia :— *Puccinia Chrysanthemi* on *Chrysanthemum* sp. under frames and in the open ; *Phyllosticta quinquefoliae* on *Ampelopsis quinquefolia* ; *Hendersonia maculans* on *Camellia* sp. under glass ; *Septoria Drummondii* on *Phlox Drummondii* in gardens.

Persia : Insect Pests (1).

Icerya purchasi has for some years caused serious damage to the citrus trees in the Caspian Provinces ; it also attacks other plants such as the pomegranate, fig, etc. and even certain wild plants. This scale has apparently no marked preference for citrus trees. The Insectarium of Antibes, France, has been requested to send several colonies of *Novius cardinalis* for acclimatisation in the infested regions.

Parlatoria zizyphi and *Chrysomphalus minor* have been observed in the same Provinces. Control by means of lime-sulphur sprays has been undertaken.

Eurygaster integriceps has caused serious losses in the Veramine region. In certain districts the damage has reached 90 %, and an average loss of 40 to 45 % is reported.

Early in the spring stock has been put in to graze the crops in the most seriously infested regions, the collection of adults was then begun and over a hundred tons were collected and burnt. Since the beginning of October collecting and burning has also been started in the mountains of Gara-agatche to prevent hibernation.

Amongst the eggs of *Eurygaster* collected at Veramine and sent for hatching in the Entomological Laboratory of the Keredj Agricultural College, certain were parasitised and a *Telenomus*, not yet identified, has emerged.

Aegean Islands : Crop Pests (2).

During September, October and November 1931 large invasions of Tingitidae were reported on pear, apple and quince trees and on poplars.

In the west coastal zone of the island of Rhodes many garden crops were considerably damaged by caterpillars of Pieridae.

Fruit fly damage to citrus orchards in Rhodes and Cos is beginning to be apparent.

Switzerland : Potato Wart Disease (3).

Potato wart disease (*Synchytrium endobioticum*), which was introduced into Switzerland for the first time in 1925, made its appearance sporadically during the following years. All the thirteen centres of the disease discovered between 1926

(1) Communication from the official correspondent of the Institute, Mr. Ahmed H. Adle, Director of the Agricultural College, Keredj, Persia.

(2) Communication from the official correspondent of the Institute, Dr. Francesco Dessy, Director of Agriculture and Forests, Government of the Aegean Islands, Rhodes.

(3) Communication from the official correspondent of the Institute, Dr. E. Neuweiler, Schweizerische Landwirtschaftliche Versuchsanstalt, Oerlikon-Zürich.

and 1930, which resulted partly from the original introduction and partly from soil infection, were destroyed by confiscating and boiling the potato crop, by disinfecting storage premises and implements and by putting the infected fields down to grass for ten years.

In 1931 the disease was again introduced in large imports from East Prussia of seed potatoes of the ' Alma ' variety, hitherto believed immune from wart disease. An enquiry showed that there were outbreaks of the disease in 51 communes belonging to 8 different Cantons. Three further centres of infection have been found in two other Cantons on the varieties ' Alma ', ' Frühe Rosen ' and ' Kaiserkrone '. Two of these were caused by a new importation of seed potatoes, and the third by soil infection. These centres also will be suppressed by severe measures, so that there is no reason to fear the disease becoming more widely spread. One of the measures consists in the use of potato varieties which are resistant to wart disease. The new introduction of the disease in 1931 will assist in accelerating the application of such a measure.

Tasmania : Clover Springtail *(Sminthurus viridis)* Field Control (1).

Spraying isolated clover and grass pastures 3 times at intervals of 10 days with 1-60 Lime Sulphur has been used successfully to give satisfactory field control of this pest.

A regulation of May 1930 prohibits the importation of Subterranean Clover seed infected with eggs of *S. viridis*.

A 10 lb. sample of seed is combed for soil particles which are examined microscopically for eggs at the Seed Testing Station.

VARIOUS QUESTIONS

Report of the International Meeting Organised by the Italian Ministry for the Colonies for the Study of the Locust Problem. Rome, September 28-October 1, 1931 (2).

For the purpose of coordinating biological studies of locusts in Africa and Western Asia, on the suggestion of the British Government, the Italian Government organised a scientific meeting at Rome on September 28, 1931, to which were invited representatives of the British Empire, France and the French Colonies and Protectorates and the International Institute of Agriculture.

Those present were : Messrs. H. B. JOHNSTON, Chief Locust Investigator, Imperial Institute of Entomology, and B. P. UVAROV, Senior Assistant, Imperial Institute of Entomology, representing the British Empire ; P. VAYSSIÈRE, Assistant

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(1) Communication from the Director of Agriculture, Department of Agriculture, Hobart, Tasmania.

(2) Communication from the Italian Ministry for the Colonies, transmitted to the International Institute of Agriculture by the Italian Ministry of Foreign Affairs.

Director of the Central Entomological Station, Professor at the Colonial Institute of Agronomy, representing France, French West Africa, French Equatorial Africa, Togo and Cameroon ; R. PASQUIER, Professor of Zoology at the Agricultural Institute of Maison-Carrée, representing Algeria ; P. RÉGNIER, Chief of the Service for Crop Protection, representing French Morocco ; F. SILVESTRI, Director of the Laboratory of General Zoology and Agricultural Entomology at the Higher Agricultural Institute, Portici, representing the Italian Ministry for the Colonies ; A. DE BENEDICTIS, Chief of the Agricultural Office of Eritrea, representing Eritrea and Italian Somaliland ; G. KRÜGER, Government Entomologist for Cirenaica, representing Cirenaica and Tripolitania ; G. TRINCHIERI, Chief of the Plant Protection Section, representing the International Institute of Agriculture.

Messrs. E. VELLANI, Director, and E. GUGLIELMI, First Secretary to the Italian Ministry for the Colonies, were also present.

Professor F. SILVESTRI was unanimously elected President and Professor G. TRINCHIERI Reporter of the meeting.

All the Delegates were agreed that locusts are a cause of serious damage to all crops. It was agreed that of all known methods of locust control the best results, allowing of the protection of thousands of cultivated acres, are obtained by the use of poisoned baits. The composition and method of use may be varied slightly from one region to another.

A memorandum on ' Investigations on Tropical African Locusts ' having been prepared by the British representatives the President proposed adopting this as a basis for the discussion.

Opinions are changing particularly with regard to the migrations of the Desert Locust (*Schistocerca gregaria* Forsk.) and the Tropical Migratory Locust (*Locusta migratorioides* R. and F.) and to the probable position of the permanent breeding areas of these species.

There was perfect agreement among the members present in recognising that the discovery of the permanent breeding areas and ecological studies of these zones will constitute the most effective and economic means of protecting the cultivated regions.

A general questionnaire was drawn up modelled on that already distributed by the Imperial Institute of Entomology and by the ' Commission Française d'Étude des Calamités'.

The Delegates of Algeria and French Morocco however were in favour of a simpler questionnaire.

The meeting expressed the wish that all the countries concerned should periodically draw up maps, preferably on the same scale, concerning swarms, eggs and hatching of larvae.

Agreement was reached on the adoption of conventional signs for recording data concerning swarms, eggs and hatching of larvae on geographical maps.

These two documents are appended to the present report.

Finally the meeting requested the Italian Ministry for the Colonies to take the necessary steps to transmit to all countries subject to invasions of desert and tropical migratory locusts the following resolutions regarding the organisation of coordinated research :

' All prerogatives of the International Institute of Agriculture resulting from the International Convention of 31 October 1920, relating to the organisation of locust control, remaining unchanged, the meeting of British, French and Italian Delegates, regarded as of purely scientific standing, passed the following resolutions :—

' (1) That the Governments concerned should encourage studies of locusts ;

' (2) That an institution situated in Europe should be made responsible for centralising, coordinating and studying biological data concerning locusts in Africa and Western Asia ;

' (3) That the Italian Government should transmit to the Governments concerned in these studies but not represented at the present meeting (1) an invitation to collaborate with the institution mentioned above ;

' (4) That in order to simplify the work of the central institution referred to in the second resolution, each Government should take into account the organisations already established for the purpose and nominate one or two centres to classify the documents received ;

' (5) That a meeting of specialists of all the Governments concerned should be held each year to make known the results of the past year's work and to draw up the programme for future research. A report of the meeting should be communicated to the International Institute of Agriculture. The next meeting might take place at Paris at the Fifth International Congress of Entomology if the French Government accepts this suggestion ;

' (6) That in view of the presence of specialists and a unique documentation (collections, bibliography, etc.) at the Imperial Institute of Entomology in London, this institution should be adopted by the Governments concerned as the centre for research on biology and taxonomy of locusts referred to in the preceding resolutions ;

' (7) That for the biological study of the Tropical Migratory Locust (*Locusta migratorioides*) a survey should be carried out as early as possible in the regions thought to be the permanent breeding areas, particularly the region of Timbuktu.

' The British entomologists now concerned in locust investigations in British West Africa are willing to undertake the work personally or preferably in collaboration with French entomologists.

' That it is desirable that the Commission nominated by the VIIth North African Conference should study the question at its next meeting '.

Resolutions 1, 2, 3, 4, 5, and 7 were passed unanimously ; the representatives of Algeria and French Morocco abstained from voting for Resolution 6.

Rome, 1st October 1931.

Signed : Filippo Silvestri, *President* ; H. B. Johnston ; B. P. Uvarov ; P. Vayssière ; R. Pasquier ; P. Régnier ; Antonio De Benedictis ; Giorgio Krüger ; G. Trinchieri, *Reporter*.

QUESTIONNAIRE.

I. — *Observations on the passage of swarms.*

(1) Locality (longitude and latitude, or distance and orientation in relation to a well-known locality).
(2) Date and hour.
(3) Direction of flight.
(4) Dominant colour of locusts : pink, red, yellow or brown.
(5) Estimate of approximate size of swarm.
(6) Height of flight.

(1) Spain, Portugal, Liberia, Belgium, Abyssinia, Arabia, Iraq, Egypt, Persia, British India, Tunis.

(7) Speed of flight, estimate in certain cases of the time taken by the swarm to cover a known distance, for example between two villages.

(8) Weather conditions: —

Wind and its direction and force in relation to the direction of flight.

Temperature.

Intensity of insolation.

Effects of sudden changes of weather on locusts (rain, storm, fall of temperature, etc.).

(9) What are the probable reasons for the swarm's alighting (time of day, change of weather, attraction of crops, etc.) ?

(10) How long did the swarm remain on the ground and in what direction did it take flight ? (Note also direction of wind).

(11) Were the locusts ready for laying ?

(To determine this open the abdomen of several females and see whether it contains eggs and if so of what size).

(12) What plants, wild and cultivated, were attacked by the locusts and which were avoided ?

(13) What natural enemies (birds, insects, etc.) were observed ?

II. — *Observations on laying (Primary swarms).*

(1) Locality.

(2) Date.

(3) Direction from which the swarm arrived (primary swarm).

(4) Weather conditions (more particularly rainfall) during the days (about one week) preceding the beginning of laying.

(5) Description of the breeding areas :—

Position (slope, valleys, canal banks, etc.).

Quality of the soil chosen (texture and moisture).

Vegetation.

(6) Length of time the swarm (primary swarm) remained.

When and in what conditions it took flight.

III. — *Observations on eggs and hatching.*

(1) Situation and extent of land infested with eggs.

(2) Density of egg deposits (average number of egg clusters per square metre).

(3) Average number of eggs in a cluster.

(4) (*a*) Date of the first layings.

(*b*) Date of hatching of the first hoppers.

(*c*) Date of hatching of the last hoppers.

(5) Weather (specially rainfall) from laying to end of hatching (changes of weather, such as sudden rains, rise or fall of temperature, etc. should be noted).

(6) What natural enemies were observed ?

IV. — *Observations on hoppers.*

(1) Locality and date of observations.

(2) Extent of zone infested with hoppers.

(3) Date of hatching of the first hoppers.

(4) Weather during development of the insects from hatching to adult stage.

(5) Description of situation preferred by the hoppers.

(6) What plants were eaten by hoppers ?

What plants were avoided (differences on this point may occur according to the age of hoppers) ?

(7) Size and density of the hopper bands.

(8) Are there present hoppers of abnormal colouring, particularly green ? If so, in what proportion to those of normal colouring (black and yellow) do they occur ? It is of the utmost importance that lots of 20 to 40 hoppers including all the colour variations should be collected in swarms of abnormal coloration and forwarded to the appropriate Entomological Station.

(9) What natural enemies (birds, insects, etc.) were observed ?

V. — *Observations on adults bred in the locality (Secondary swarm).*

(1) Locality and date of observations.

(2) Notes (if any) on the primary swarm in cases where there is no doubt concerning the relationship with the secondary swarm.

(3) Dates at which the insects of the new swarm became winged and at which they turned yellow.

(4) Date at which the locusts began to fly.

(5) At what date and in which direction did the new swarm leave the locality ?

(6) Was the swarm dense or somewhat sparse

(7) In all cases in which breeding is observed 20 to 40 adults of the primary swarm and an equal number of the secondary swarm should be collected for the appropriate Entomological Station. But great care must be taken to establish the relationship correctly, specially if the locality is visited by several swarms, which must be clearly specified.

(8) Plants eaten by the secondary swarm.

Plants avoided by the secondary swarm.

(9) What natural enemies (birds, insects, etc.) were observed ?

VI. — *Notes on preceding invasions.*

It would be extremely useful if the observations combined information regarding old locust invasions. It is necessary to note :—

The years (and months if possible) of invasions, the districts or localities invaded ;

Characteristics permitting identification where possible of the species (colour, size, etc.) ;

The supposed source of the invasion ;

Was there breeding in the locality ?

How and when did the invasion end ?

VII. — *Miscellaneous information.*

Collect native sayings, customs, superstitions, etc., concerning locusts at all stages of development. Native names should be noted, whether designating locusts in general or particular species.

Name and address of correspondent.

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SIGNS ADOPTED BY THE MEETING OF 28 SEPTEMBER-1ST OCTOBER, 1931, FOR MAPPING LOCUSTS.

Swarm flying in a known direction (date and approximate size of the swarm one on each side of the arrow).

Swarm in flight, direction not specified.

Swarm on the ground.

Swarm on the ground departed in a known direction.

Swarm on the ground arrived from a known direction.

6 Swarm eddying.

△ Laying swarm.

○ Breeding area.

● Larvae.

s Typical solitary phase.

For adults only
- *Red* — pink adults.
- *Green* — reddish brown adults.
- *Blue* — yellow adults.
- *Black* — colour unknown.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Italy. — By Ministerial Decree of 12 October 1931 the Commune of Tortoreto in the province of Teramo has been declared infected with grape phylloxera. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 20 ottobre 1931, anno 72°, n. 243, p. 5136).

*** By Ministerial Decree dated 14 November 1931 all the viticultural districts of the Communes of the province of Pesaro e Urbino have been declared infected with grape phylloxera.

The same measure has been adopted by Ministerial Decree of 24 November 1931 regarding the Commune of Caggiano in the province of Salerno. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 2 dicembre 1931, anno 72°, n. 278, p. 5867).

*** A Ministerial Decree of 18 November 1931 containing the integrant provisions concerning the technical special regulations for the exportation of citrus fruits establishes, *inter alia*, that exportation of gummy fruits, of frost damaged fruits and of fruits seriously affected with sooty mould is prohibited. Mandarin oranges intended for export must be sound, free from lesions and other defects. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 10 dicembre 1931, anno 72°, n. 277, pp. 5836-5839, 8 figg.).

Aegean Islands (1). — By Governatorial Decree No. 247 dated 26 December 1931, it is forbidden to introduce vine cuttings and layers, plants and their parts of citrus, plants and their parts of mulberry and banana plants.

The Governatorial Decree No. 55 of 2 April 1930 (see this *Bulletin*, 1930, No. 7, p. 106) is annulled.

Yugoslavia (2). — On the basis of the Law of 9 December 1929 for the protection of cultivated plants the Minister of Agriculture issued on 9 November 1931 a regulation by which all consignments of plants or plant parts (fruit trees and tree fruits, with the exception of tropical fruits, ornamental plants, trees and shrubs, flowers, plants, cuttings and bud slips, bulbs and rhizomes), and fresh plant débris must be accompanied by a health certificate issued by a competent official and duly authorised by the exporting country and conforming to the model annexed to the International Convention for Plant Protection adopted at Rome on 16 April 1929 (see this *Bulletin*, 1929, No. 4, p. 55). Certificates coming from North and South America, Australia, Japan, China and the Hawaiian Islands must carry a statement to the effect that the consignment is free from *Leptinotarsa decemlineata*, *Popillia japonica*, *Aspidiotus perniciosus* and *Phthorimaea operculella* in particular.

(1) Communication from the official correspondent of the Institute, Dr. Francesco Dessy, Director of Agriculture and Forests, Government of the Aegean Islands, Rhodes.

(2) Communication from the official correspondent of the Institute, Dr. Mladen Josifović, Professor of Plant Pathology in the Faculty of Agriculture and Forestry, Belgrade.

The certificates must be in the language of the exporting country and in a language recognised as an international language. Certificates issued more than seven days previous to consignment will not be held valid.

The phytopathological control stations of Yugoslavia are entitled to inspect consignments of plants or plant parts even if they are accompanied by a health certificate.

*** With the purpose of preventing the introduction into Yugoslavia of serious diseases and pests of the potato (*Synchytrium endobioticum*, *Leptinotarsa decemlineata* and *Phthorimaea operculella*) the Minister of Agriculture has issued a regulation, dated 9 November 1931, by which the importation and transit of potatoes infected with such diseases and pests is prohibited. It is also forbidden to import or cause the transit of potatoes coming from a country in which the presence of wart disease (*S. endobioticum*) and the pests mentioned has been determined. Consignments of potatoes coming from other countries must be accompanied by a sanitary certificate issued by an authorised official of the exporting country, containing : (1) a declaration by the producer of the origin of the goods, endorsed by the local competent authorities ; (2) a declaration by the official stating : (*a*) that the country of origin is free from wart disease, *Lept. decemlineata* and *Phth. operculella* ; (*b*) that he has personally and officially inspected the goods in the bags or cases and found them healthy ; (*c*) that the seals of the official plant sanitary establishment were affixed in his presence to the packages or to the wagons. The certificate must also bear the number of the sealed wagon, the number of packages and the text of the seal. Importation will be allowed only of potatoes which are contained in new bags or cases not previously used.

Importation of potatoes may take place only by the following frontier stations : Sušak, Rakek, Jesenice, Maribor, Drnje (Koprivnica), Beli Manastir, Kelebia, Velika Kikinda, Caribrod and Djevdjelia and by the ports of Sušak, Split and Dubrovnik.

Consignments of potatoes presented for importation will be inspected at the stations and ports specified above by the State plant sanitary control services, even when the consignments are accompanied by the required certificates.

Transit of potatoes through Yugoslavian territory is authorised only in direct wagons which are well closed, sealed and accompanied by a certificate of health and origin.

RECENT BIBLIOGRAPHY

AGATI, JULIAN A. Studies on the root-rot of the sugar-cane seedlings in the nursery. *The Philippine Journal of Agriculture*, Manila, 1931, Vol. II, No. 1, pp. 1-26, pls. I-V. Literature cited, pp. 23-24.
[*Pythium* sp.].

ALDABA, VICENTE C. A study of condition of coconut trees in the leaf-miner infested area. I. Effect of the leaf-miner attack on the coconut and of cutting of the leaves. *The Philippine Journal of Agriculture*, Manila, 1931, Vol. II, No. 1, pp. 51-67, fig. 1, pl. I.
[*Promecotheca cumingii*].

Aldaba, Vicente C., Elayda, Aniano, Lanuza, Epitacio A. A study of condition of coconut trees in the leaf-miner infested area. II. The probable drop in production of coconut trees within the area infested by leaf miners in Laguna, Tavabas and Batangas. *The Philippine Journal of Agriculture*, Manila, 1931, Vol. II, No. 1, pp. 69-81, figs. 1-3.
[*Promecotheca cumingii*].

Anleitung für die Untersuchung von Pflanzen, Obst und Kartoffeln bei der Einfuhr. Bearbeitet in der Biologischen Reichsanstalt für Land- und Forstwirtschaft. Berlin 1931, 21 S., 17 Abb.
[Contents : — I. Untersuchungsraum und Hilfsmittel für die Untersuchung. — II. Untersuchung von Pflanzen und Obst auf das Vorhandensein von San José-Schildlausen : A. Voruntersuchung mit dem blossen Auge und mit der Lupe : 1. Bei Pflanzen, 2. bei Obst. B. Mikroskopische Untersuchung. — III. Untersuchung von Aepfeln auf Befall mit Maden der Apfelfruchtfliege. — IV. Untersuchung von Kirschen auf Befall mit Maden der Kirschfliege. — V. Untersuchung von Kartoffeln auf Befall mit Kartoffelkrebs : A. Untersuchung mit dem blossen Auge. B. Mikroskopische Untersuchung : *a*) Untersuchung von Gewebe und Geweberesten ; *b*) Untersuchung von Erdproben].

Aristow, M. T. Über die Schädlichkeit des Apfelblütenstechers. *Anzeiger für Schädlingskunde*, Berlin 1931, VII. Jahrg., Heft 11, S. 121-128, Abb. 1-4 ; Heft 12, S. 139-143, Abb. 5a-5b. Verzeichnis der benutzten Arbeiten, S. 143.
[*Anthonomus pomorum*].

Arnaud, G. Les Astérinées. — VII. *Annales de Cryptogamie Exotique*, Paris, 1931, tome IV, fasc. 2, p. 74-97, pl. II-VII. Bibliographie, p. 95-96.

Heim, Roger. Maladies à virus et maladies bactériennes des plantes coloniales : état actuel de la question. *Annales de Cryptogamie Exotique*, Paris, 1931, tome IV, fasc. 2, p. 104-110.

Benítez, J., y Sanchís, R. Beneyto. « Wildfire ». *Revista de Tabacos*, Madrid, 1931, núms. 7 y 8, págs. 15 a 17, 2 figs.
[*Bacterium Tabacum* reported in Spain].

Blunck, Hans. *Psylliodes affinis* Payk. an Tabak. *Anzeiger für Schädlingskunde*, Berlin 1931, VII. Jahrg., Heft 12, S. 133-136, Abb. 1. Schriftenverzeichnis, S. 136.

Bondar, Gregorio. Insétos que deterioram o cacau em depositos. *O Campo*, Rio de Janeiro, 1931, anno II, nº. 6, pags. 60-61, figs. 1-5.
[*Ephestia elutella, Corcyra cephalonica, Araeocerus fasciculatus, Carpophilus dimidiatus, Spermologus rufus, Setomorpha rutella*].

Bondar, Gregorio. Notas biologicas sobre alguns hispineos observados na Bahia. *O Campo*, Rio de Janeiro, 1931, anno II, nº. 6, pags. 74-75, figs. 1-4.
[*Cephalodonta maculata, C. sheppardi, Charistena ruficollis, Anisostena fasciata, Anoplitis canavaliae, Chalepus sanguinicollis, C. bondari, Xenochalepus trilineatus, X. mucunae, Balsiosus duodecimmaculatus, Octotoma tessellata, Uroplata mucronata, Heterhispa costipennis, Codiohispa anonicola, Cnesthispa darwini, C. acuminata*].

Brunn, G., und Schwerdtfeger, F. Die Bestäubung der Nonne in den preussischen Staatsoberförsterei Fuhrberg. *Forstwissenschaftliches Centralblatt*, Berlin 1931, 53. Jahrg., Heft 21, S. 741-753, Abb. 1-7. Literatur, S. 753.
[*Lymantria monacha*].

Bryan, Jr., E. H. An introduction to insects in Hawaii. *The Mid-Pacific Magazine*, Honolulu, 1931, Vol. XLII, No. 4, pp. 321-323.

Burrell, R. W. *Dexia ventralis* Aldrich, an imported parasite of the Japanese beetle. *Journal of Agricultural Research*, Washington, D. C., 1931, Vol. 43, No. 4, pp. 323-336, figs. 1-7.
[*D. ventralis*, introduced into the United States of America from Korea, is a parasite of *Popillia japonica*].

Carmin, J., and Scheinkin, D. The fauna of Palestinian plants : 2. *Ficus sycomorus* Linné. *Bulletin de la Société Royale Entomologique d'Egypte*, Le Caire, 1931, nouv. sér., année 1931, fasc. 3-4, p. 164-187, figs. 1-78, diagrs. 1-2.

Chabrolin, Ch. Le mildiou de la vigne dans ses rapports avec la pluviométrie en Tunisie. Procédés de lutte. *L'Agriculture Pratique des Pays Chauds*, Paris, 1931, 2e année, nº 18, p. 887-901.
[*Plasmopara viticola*].

Chamberlain, E. E. Corticium disease of potatoes. I. Propagation and spread of the disease. *The New Zealand Journal of Agriculture*, Wellington, 1931, Vol. 43, No. 3, pp. 204-209, figs. 1-4.
[*Corticium vagum*].

Chenon, P. Destruction des cochenilles du caféier. *Revue Agricole*, Pointe-à-Pitre, 1931, vol. IV, nº 11, p. 310-311.
[*Lecanium viride, L. hemisphaericum* in Guadeloupe].

Chevalier, Aug. Myriapodes ennemis des jeunes caféiers à la Côte d'Ivoire. *Revue de Botanique Appliquée et d'Agriculture Tropicale*, Paris, 1931, 13e année, Bulletin nº 123, p. 942.
[*Ophistreptus rugosus, Pachybolus laminatus* var. *chevalieri* n. var.].

Chevalier, Aug. Sur l'extension et la propagation de la maladie de la rosette de l'arachide au Sénégal. *Comptes rendus hebdomadaires des séances de l'Académie des Sciences*, Paris, 1931, tome 193, nº 22, p. 1115-1117.
[Virus disease].

Clausen, C. P. Insects injurious to agriculture in Japan. *United States Department of Agriculture, Circular No. 168*, Washington, D. C., 1931, 115 pp., 1 map. Literature cited, pp. 92-103.
[Summary of the data published up to the end of 1926 concerning the insects and mites injurious to crops and plant products in Japan].

Cocchi, F. Un marciume dei limoni dovuto a *Pleospora herbarum* (Pers.) Rabenh. *Bollettino della R. Stazione di Patologia Vegetale* [di Roma], Firenze, 1931, anno XI, n. s., n. 3, pp. 179-213, figg. 1-12, tav. III. Bibliografia, pp. 212-213.
[Disease observed on a lemon coming from Sicily].

Curzi, M. Malattie del pesco caratterizzate da filliscosi (« Phony disease » e « malattia del pennacchio »). *Bollettino della R. Stazione di Patologia Vegetale* [di Roma], Firenze, 1931, anno XI, n. s., n. 3, pp. 221-243, figg. 1-7, tav. IV-V. Riferimento bibliografico, pp. 242-243.
[The writer has coined the term ' filliscosi ' (Lat. : ' phyllischosis ') to indicate the abnormally vigorous development of the leaves and the resulting appearance of the foliage of the diseased plants, which is more vigorous than that of healthy plants.
' Phony disease ', which has not yet been recorded except in the U. S. A. (Georgia, Alabama and Mississippi), is a virus disease.
The nature of the ' malattia del pennacchio ' (observed near Rome and thus named by the growers on account of the characteristic plume-like aspect of badly diseased branches) is not yet determined].

Cuscianna, N. Su di un insetto che danneggia il granoturco. *L'Amico dei Campi*, Trieste, 1931, anno IV (n. s.), n. 11, pp. 324-327.
[*Leucania zeae* and *Pyrausta nubilalis*, in the provinces of Trieste and Pola].

Danser, B. H. Contributions à l'étude de la flore des Indes néerlandaises. XIX. The Loranthaceae of the Netherlands Indies. *Bulletin du Jardin Botanique*, Buitenzorg, 1931, sér. III, vol. XI, livr. 3-4, p. 233-519, fig. 1-30. Literature cited, p. 486-496.
[Latin diagnoses are given of a number of species new to science].

DE FLUITER, H. J. De bloedluis, Eriosoma lanigerum (Hausm.) in Nederland. *Tijdschrift over Plantenziekten*, Wageningen 1931, 37e jaarg., 11e en 12e aflev., blz. 201-280 ; 12e aflev., blz. 281-330, pl. XX-XXXII, curven I-IV. Literatuur, blz. 274-277, 320-321.
[In Dutch].

DELLA BEFFA, G. Notizie su alcuni microlepidotteri nocivi nuovi o poco noti pel Piemonte. *Bollettino del Laboratorio Sperimentale (Regio Osservatorio Regionale) di Fitopatologia*, Torino, 1931, anno 8, n. 6, pp. 3-9.
[Deals particularly with *Gracilaria azaleella*, *Nothris marginella* and *Cemiostoma laburnella*].

DI LORENZO, SALVATORE. Nuovo metodo per distruggere l'orobanca. *Il Giornale d'Italia Agricolo*, Roma, 1931, anno XIV, n. 46, p. 2, 1 fig.
[The method depends for its success on the growth of the beans being thick enough to deprive the broomrape (*Orobanche crenata*) of light and air and thus choke it].

ERNST, FRITZ. Eine Milbe als Kiefernnadelschädling. *Forstwissenschaftliches Centralblatt*, Berlin 1931, 53. Jahrg., Heft 22, S. 800-803, Abb. 1-2.
[Deals with a gall mite not yet identified].

ESCHERICH, K. Wissenschaftliche und praktische Arbeit anlässlich der letzten bayerischen Kieferneulen-Kalamität. *Forstwissenschaftliches Centralblatt*, Berlin 1931, 53. Jahrg., Heft 19, S. 665-682, Abb. 1-3; Heft 20, S. 715-726, Abb. 4-6.
[*Panolis flammea*].

FELCINI, A. Il seccume degli olmi (Graphium Ulmi). *Giornale di Agricoltura*, Jesi, 1931, anno XCII, n. 12, pp. 185-188.

FEYTAUD, J. Comment progresse l'invasion doryphorique. *Revue de Zoologie Agricole et Appliquée*, Bordeaux, 1931, 30e année, nº 5, p. 69-82.
[*Leptinotarsa decemlineata* in France].

FISCHER, R. Eine wenig beachtete Dahlienkrankheit. *Neuheiten auf dem Gebiete des Pflanzenschutzes*, Wien 1931, Jahrg. 1931, Heft Nr. 5, S. 130-132.
[*Entyloma Dahliae*].

FRANCHINI, G. Encore au sujet des spirochètes des Euphorbes. *Bulletins de la Société de Pathologie Exotique et de ses filiales de l'Ouest-Africain et de Madagascar*, Paris, 1931, tome XXIV, nº 9, p. 809-811, fig. 1.
[Description in French of *Spirochaete roubaudi* n. sp. in the latex of *Euphorbia palustris* in Italy].

FRANCHINI, G. Etude sur un flagellé spécial du latex d'un figuier de l'Erythrée (*Ficus hochstetteri* (Mg) A. Rich.). *Bulletins de la Société de Pathologie Exotique et de ses filiales de l'Ouest Africain et de Madagascar*, Paris, 1931, tome XXIV, nº 9, p. 843-848, fig. 1-2.
[*Herpetomonas* (*Leptomonas*) *ganorae* n. sp. Description in French].

FRAPPA, CL. Les principaux insectes nuisibles aux plantes productrices de tanin à Madagascar. *L'Agronomie Coloniale*, Paris, 1931, 20e année, nº 166, p. 97-98 ; nº 167, p. 129-135, pl. I-II.
[*Ptyelus goudoti*, *Plataspis variegata*, *Pl. coccinelloides*, *Pl. coccinelloides* var. *madagascariensis*, a scale insect unidentified, *Icerya seychellarum*, *Anoplocnemis madagascariensis*, *Deborrea malgassa*, *Callidryas florella*, *Xanthidia floricola*, *Polydesma umbricola*, *Batocera rubus*, *Sternotomis cornutor*, *Phryneta marmorea*, *Encya strigiscutata*, *Sinoxylon* sp., *Xylopertha picea*, *Xyloperthodes castaneipennis*, *Derosphaerus globulicollis*, *Diplolophotus insularis* on *Acacia* spp. and more especially on *A. decurrens*].

Frat. Sgaravatti-Sementi-Padova. I nemici dell'ortolano (Insetti e malattie — Avversità ambientali — Erbe infestanti e parassite — Metodi di lotta). Con prefazione del Prof. C. Cappelletti della R. Università di Padova. Padova, Istituto Veneto di Arti Grafiche, 1931, 96 pp., 187 figg.
[A practical handbook].

García Mercet, Ricardo. Afelínidos paleárticos (Hym. Chalc.). 7.ª nota. *Boletín de la Sociedad Española de Historia Natural*, Madrid, 1931, tomo XXXI, núm. 8, págs. 559 a 566, figs. 1 a 7.
[*Prospaltella lutea*, parasite of an *Aleurodes* of the aubergine ; *P. caelibaris* n. sp. ; *P. aspidioticola*, internal parasite of *Aspidiotus abietis* on *Pinus sylvestris* ; *Trichaporus partenopea*. Descriptions in Spanish].

Goidanich, Athos. Un metodo di lotta efficace contro larve di alcuni Scarabeidi. *L'Italia Agricola*, Piacenza, 1931, anno 68º, n. 11, p. 857-860, figg. 1-5.
[Distribution on the ground round fruit trees of crystals of paradichlorobenzol to control larvae of *Pentodon punctatus*].

Gleisberg, W., und Mentzel, F. Methoden der Laboratoriumsprüfung von Raupenleimen. *Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz*, Stuttgart 1931, 41. Bd., Heft 11, S. 552-587, Abb. 1-9. Literaturübersicht, S. 586-587.

Hänni, E. Landwirtschaft und Vogelschutz. *Schweizerische Landwirtschaftliche Monatshefte*, Bern-Bümpliz 1931, IX. Jahrg., Nr. 9, S. 254-257.

Hédin, L. Culture du manioc en Côte d'Ivoire ; observations complémentaires sur la mosaïque. *Revue de Botanique Appliquée et d'Agronomie Tropicale*, Paris, 1931, 11e année, Bulletin nº 119, p. 558.

Horn. Durch ausgiebige Düngung und intensive Schädlingsbekämpfung zu regelmässigen Obsterträgen. *Geisenheimer Mitteilungen über Obst- und Gartenbau*, Geisenheim 1931, 46. Jahrg., Nr. 12, S. 201-205, Abb. 77-80.

Iglesias, L. La lucha antiacrídica. Estado actual de los conocimientos científicos referentes a la biología de las *langostas* españolas, sus parásitos y los medios de lucha conque hoy se cuenta para combatirlas. Pubricado en : Arquivos do Seminario de Estudos Galegos-IV. Seición de Cencias. Sant-Iago, Nós, Pubricacións Galegas e Imprenta, [1931], 75 pags., 23 figs. Indice bibliográfico, págs. 69 a 75.
[The harmful species of locusts in Spain are *Calliptamus italicus*, *Dociostaurus maroccanus* and *Decticus albifrons*].

International Address Book of Botanists. Being a directory of individuals and scientific institutions, universities, societies, etc., in all parts of the world interested in the study of botany. Prepared in accordance with a resolution passed at the Fifth International Botanical Congress, Cambridge, 1930. London, Published for the Bentham Trustees by Baillière, Tindall and Cox, 1931, pp. XV+605.
[This address book of the botanists of the world, which has already received a preliminary notice in this *Bulletin* (1931, No. 8, p. 156) supplants the now out-of-date third edition of the 'Botaniker-Adressbuch' of I. Dörfler (Vienna, 1909). It has been prepared and published under the direction of an international committee composed of Prof. Dr. L. Diels (Germany), Dr. E. D. Merrill (United States of America) and the late Dr. F. T. Chipp (England). The volume opens with three separate lists of the countries in respectively English, French and German, followed by a list of the abbreviations used in the text. The countries are arranged in the text in alphabetical order and the names are given in each case in English, French and German. The text for each country is as far as practicable in the language of the country in Roman script. The lists under the headings of the countries include the Societies, the research institutions and colleges with their addresses, the names of the botanists with the academic titles, profession, address and special subject of each. At the end of the book is an alphabetical list of the names of the botanists included].

JACQUES, CH. Parasite du café en grains. *Revue Agricole*, Nouméa, août 1931, p. 479-480.
[The insect concerned, still unidentified, was observed in New Caledonia].

JANISCH, ERNST. Experimentelle Untersuchungen über die Wirkung der Umweltfaktoren auf Insekten. II. Über die Mortalität und die Variationsbreite tropischer Insekten in Ceylon mit allgemeinen Bemerkungen über die Umweltabhängigkeit und das biologische Optimum. *Zeitschrift für Morphologie und Ökologie der Tiere*, Berlin 1931, 22. Bd., 2./3. Heft, S. 287-348, Abb. 1-11. Schrifttum, S. 347-348.

JARVIS, HUBERT. Experiments with a new fruit fly lure. *Queensland Agricultural Journal*, Brisbane, 1931, Vol. XXXVI, Pt. 5, pp. 485-491.
[The bait used, which was a mixture of imitation vanilla essence, ammonia and water, was found to be attractive particularly to *Chaetodacus tryoni* and *Ceratitis capitata*].

LESLEY, J. W. The resistance of varieties and new dwarf races of tomato to curly top (western yellow blight or yellows). *Hilgardia*, Berkeley, California, 1931, Vol. 6, No. 2, pp. 24-44. Literature, p. 44.
[Virus disease transmitted by *Eutettix tenellus*].

LUGARD, W.-J. Invasion de sauterelles (Locusta migratorioides) dans les Uélé. *Bulletin Agricole du Congo Belge*, Bruxelles, 1931, vol. XXII, nº 1, p. 71-74, fig. 49-51.

MALENOTTI, ETTORE. Lotta invernale contro la cocciniglia del pesco. *L'Italia Agricola*, Piacenza, 1931, anno 68, n. 9, pp. 604-609.
[*Diaspis leperii*, *D. pentagona*].

MIDDLETON, A. D. Damage to forests by squirrels. *Quarterly Journal of Forestry*, London, 1931, Vol. XXV, No. 4, pp. 317-326, figs. 1-4.
[*Sciurus leucorus*, *S. carolinensis*].

MINTO, JOHN. Reference books. A classified and annotated guide to the principal works of reference. Supplement. London, The Librarian Association, 1931, pp. VII + 140.
[In this supplement to the book published in 1929 under the same title are included all the work in continuation and the new editions issued up to December 1930. In pp. 56-59 of the new volume are enumerated works on general biology, as well as on botany and zoology in particular].

MONTEMARTINI, L. L'Osservatorio fitopatologico di Palermo negli anni 1929-1931. *Rivista di Patologia Vegetale*, Pavia, 1921, anno XXI, n. 9-10, pp. 257-279.
[Report of the work of the Observatory].

MUTH. Die Imprägnierung von Weinbergspfählen. *Wein und Rebe*, Mainz 1931, 13. Jahrg., Nr. 5, S. 172-191. Literatur-Zusammenstellung, S. 191.

NAGEL, W. Dipyridyle zur Schädlingsbekämpfung. *Anzeiger für Schädlingskunde*, Berlin 1931, VII. Jahrg., Heft 12, S. 137-139, Abb. 1-2.

ORIAN, G. Les galles des tiges de la canne à sucre à Maurice. *La Revue Agricole de l'Ile Maurice*, Maurice, 1931, no. 58, p. 131-133.
[The cause of this affection is still unknown].

PASSY, PIERRE. La mouche des pêches, sa destruction. *Revue Horticole*, Paris, 1931, 103e année, nº 24, p. 584-585.
[*Ceratitis capitata*].

PETRI, L. Il metodo d'isolamento della « Phytophthora cambivora ». *Bollettino della R. Stazione di Patologia Vegetale* [di Roma], Firenze, 1931, anno XI, n. s., n. 3, pp. 214-221, figg. 1-3.

PETRI, L. La coltivazione del castagno giapponese in Italia. *Bollettino della R. Stazione di Patologia Vegetale* [di Roma], Firenze, 1931, anno XI, n. s., n. 3, pp. 275-284, figg. 1-4.

[The writer refers to the progress of the plantations of Japanese chestnuts (*Castanea crenata*), resistant to ink disease (*Phytophthora cambivora*), in various parts of Italy].

PETRI, L. Provvedimenti necessari per far fronte alla moria degli olmi. *Bollettino della R. Stazione di Patologia Vegetale* [di Roma], Firenze, 1931, anno XI, n. s., n. 3, pp. 284-289.

[Control of the resistance to *Graphium Ulmi* of Asiatic species of *Ulmus* (*U. pumila, U. japonica, U. Wilsoniana*, etc.) and investigation of the production of hybrids and the selection of strains resistant to the disease].

PŠTROSS. 50 Jahre internationale Reblauskonvention. *Landwirtschaftliche Fachpresse für die Tschechoslovakei*, Tetschen 1931, 9. Jahrg., Nr. 50, S. 393.

[*Phylloxera vastatrix*].

PUECHER PASSAVALLI, LUIGI. Le malattie del castagno. *L'Alpe*, Milano, 1931, anno XVIII, n. 12, pp. 333-340, 12 figg.

[*Blepharospora cambivora, Armillaria mellea, Rosellinia necatrix, Hypholoma fasciculare, Polyporus sulphureus, P. fulvus, P. hispidus, Daedelea quercina, Fistulina hepatica, Coryneum perniciosum, Diplodina Castaneae, Sphaerella maculiformis, Microsphaera quercina, Penicillium crustaceum, Rhacodium cellare, Phoma endogena*, 'cipollatura' (due to various causes), cork chafer, mole-cricket, *Lachnus longipes, Agriotes angustulus, Callidium variabile, C. sanguineum, Platypus cylindricus, Phymatodes lividus, Eccoptogaster intricatus, Xyleborus dryographus, X. dispar, Zeuzera pyrina, Cerambyx scopolii, Polydrusus sericeus, P. atomarius, Lymantria dispar, Malacosoma neustria, Phalera bucephala, Acronycta aceris, Nepticula castanella, Carpocapsa splendana* var. *reaumurana, Balaninus elephas*].

PUECHER PASSAVALLI, LUIGI. Le malattie del faggio. *L'Alpe*, Milano, 1931, anno XVIII, n. 12, pp. 453-457, 7 figg.

[*Phytophthora Fagi, Pestalozzia Hartigii, Armillaria mellea, Nectria ditissima, Stereum hirsutum, Hydnum diversidens, Polyporus hispidus, Fomes igniarius, F. fomentarius, Phyllactinia suffulta, Microsphaera quercina, Lymantria dispar, Euproctis chrysorrhoea, Malacosoma neustria, Hybernia defoliaria, Dasychira pudibunda, Lithocolletis faginella, Lachnus fagi*, cock chafer, *Polyphylla fullo, Phyllobius argentatus, P. maculicornis, P. viridicollis, Rhynchites betuleti, Orchestes fagi, Megachile centuncularis, Cecidomyia fagi, Cryphalus fagi, Xyleborus saxeseni, Xyloterus domesticus, Agrilus viridis, Cerambyx scopolii, Pyrrhydium sanguineum*].

PUSSARD-RADULESCO, E. Contribution à l'étude économique des Thysanoptères de France. *Revue de Zoologie Agricole et Appliquée*, Bordeaux, 1931, 30e année, nº 4, p. 53-65, fig. 6-7.

[*Kakothrips robustus, Thrips* spp., *Haplothrips* spp., *Limothrips denticornis, Taeniothrips inconsequens, Porphyrothrips cottei, Heliothrips haemorrhoidalis, Parthenothrips dracaenae*, etc.].

RABINOVITZ SERENI, D. Ricerche sulla fisiologia dell'*Helminthosporium gibberosporum* Curzi. *Bollettino della R. Stazione di Patologia Vegetale* [di Roma], Firenze, 1931, anno XI, n. s., n. 3, pp. 244-274, figg. 1-4. Bibliografia, pp. 273-274.

[*H. gibberosporum* causes a disease of the banana (*Musa Cavendishii*) in Italian Somaliland].

RAGIONIERI, A. La « Contarinia pyrivora » ed un nuovo metodo di lotta contro di essa. *Firenze Agricola*, Firenze, 1931, anno IV, n. 12, pp. 569-571, 2 figg.

[Spraying with 'Solfurea'].

SANDHACK, HERM. A. Die tropischen Orchideen, ihre Heimat, Einfuhr, Kultur und Vermehrung. (Gärtnerische Lehrhefte herausgegeben von A. Janson in Eisenach. Heft 42). Berlin, Verlagsbuchhandlung Paul Parey, 1931, 66 S., 24 Abb.

[The contents include :— 12. Schädlinge der Orchideen (S. 60-64)].

SANSONE-CAPOGROSSO, A. Ricerche di nuovi mezzi di lotta artificiale contro la « bianca-rossa » degli agrumi. *Giornale di Agricoltura della Domenica*, Piacenza, 1931, anno XLI, n. 48, p. 527, 1 fig.

[*Chrysomphalus dictyospermi*].

SERVICE TECHNIQUE AGRICOLE DE LA COMPAGNIE COTONNIÈRE CONGOLAISE. Le ver rose du coton. *Gelechia* (*Platyedra*) *gossypiella* Saunders. *Bulletin Agricole du Congo Belge*, Bruxelles, 1931, vol. XXII, nº 2, p. 168-169, 1 pl. en coul.

SMITH, KENNETH M. On the composite nature of certain potato virus diseases of the mosaic group as revealed by the use of plant indicators and selective methods of transmission. *Proceedings of the Royal Society*, London, 1931, Vol. B 109, No. B 762, pp. 251-267, pls. 30-33.

SMITH, ROGER C. A study of temperature and humidity conditions in common types of insect rearing cages. *Journal of Agricultural Research*, Washington, D. C., 1931, Vol. 43, No. 6, pp. 547-557, fig. 1.

SORIANO, S. El « corcovo » y el « polvillo » del tabaco en la República Argentina. *Revista de la Facultad de Agronomía y Veterinaria*, Buenos Aires, 1931, entrega II, tomo VII, págs. 371 a 392, láms. XVII a XX.

[The ' polvillo ' and the ' corcovo ' are provisionally referred to the group of the virus diseases].

SPRENGEL, L. Eine Minierfliege als Zwiebelschädling in der Bayerischen Rheinpfalz. *Der Obst- und Gemüsebau*, Berlin 1931, 77. Jahrg., Heft 10, S. 166-167, 1 Abb.

[*Dizygomyza cepae*].

SPRENGEL, L. Epidemiologische Forschungen über der Traubenwickler *Clysia ambiguella* und ihre Auswertung für die praktische Grossbekämpfung. *Wein und Rebe*, Mainz 1931, 13. Jahrg., Nr. 7, S. 270-287, Abb. 1-5.

SPRENGEL, L. Über zwei Hyperparasiten von *Aphelinus mali* Hald. *Anzeiger für Schädlingskunde*, Berlin 1931, VII. Jahrg., Heft 11, S. 130.

[*Asaphes vulgaris, Pachyneuron aphidis*].

STAPP, C., und BORTELS, H. Der Pflanzenkrebs und sein Erreger, Pseudomonas tumefaciens. 1. Mitteilung : Konstitution und Tumorbildung der Wirtspflanze. *Zeitschrift für Parasitenkunde*, Berlin 1931, 3. Bd., 4. Heft, S. 654-663, Abb. 1-7.

STIRRUP, H. H., and EWAN, J. W. Investigations on celery diseases and their control. *Ministry of Agriculture and Fisheries, Bulletin No. 25*, London, 1931, pp. VI + 34, 13 figs.

[*Pythium* ? *artotrogus, Phoma apiicola, Septoria Apii, Psila rosae*].

STOLZE, KARL VIKTOR. Beitrag zur Biologie, Epidemiologie und Bekämpfung der Blattfleckenkrankheit der Zuckerrübe (Cercospora beticola Sacc.). *Arbeiten aus der Biologischen Reichsanstalt für Land- und Forstwirtschaft, Berlin-Dahlem*, Berlin 1931, XIX. Bd., Heft 4, S. 337-402, Fig. 1-24. Schriftenverzeichnis, S. 399-402.

SWEZEY, O. H. Insect pests of sugar- cane in Hawaii. *The Mid-Pacific Magazine*, Honolulu, 1931, Vol. XLII, No. 4, pp. 324-327, figs. 1-5.

[*Rhabdocnemis obscura, Perkinsiella saccharicida, Anomala orientalis, Cirphis unipuncta, Spodoptera mauritia, Omiodes accepta, Aphis sacchari, Trionymus sacchari, Oxya chinensis*].

TAPKE, V. F. Influence of humidity on floral infection of wheat and barley by loose smut. *Journal of Agricultural Research*, Washington, D. C., 1931, Vol. 43, No. 6, pp. 503-516, figs. 1-7.
[*Ustilago Tritici*].

UNITED STATES DEPARTMENT OF AGRICULTURE. PLANT QUARANTINE AND CONTROL ADMINISTRATION. Directory of field activities of the Plant Quarantine and Control Administration, 1931. *Miscellaneous Publication No. 47*, Washington, D. C., 1931, 60 pp., 1 map.

UPHOF, J. C. TH. Tillandsia usneoides als Pflanzenschädling. *Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz*, Stuttgart 1931, 41. Bd., Heft 12, S. 593-607, Abb. 1-11.

UPPAL, B. N., CHEEMA, G. S., and KAMAT, M. N. Powdery mildew of the grape and its control in Bombay. *Department of Agriculture, Bombay, Bulletin No. 163 of 1930*, Bombay, 1931, 30 pp., 1 fig., 5 pls. Literature cited, pp. 29-30.
[*Uncinula necator*].

VAN BEYMA THOE KINGMA, F. H., und VAN HELL, W. F. Ueber die Botrytiskrankheiten der Lilien. *Phytopathologische Zeitschrift*, Berlin 1931, Bd. III, Heft 6, S. 619-632, Abb. 1-6.
[*Botrytis elliptica* (Berk.) Cooke].

VECCHI, ANITA. Le api e le irrorazioni arsenicali ai frutteti. *L'Italia Agricola*, Piacenza, 1931, anno 68°, n. 11, pp. 840-844.

VERNON, T. R. An improved type of moist chamber for studying fungal growth. *Annals of Botany*, London, 1931, Vol. XLV, No. CLXXX, pp. 733-737, figs. 1-2.

VERPLANCHE, GERMAIN. Expériences sur la transmission des maladies de dégénérescence de la pomme de terre. II. — Résultats des essais faits en 1931. *Annales de Gembloux*, Bruxelles, 1931, 37e année, 11e livr., p. 345-349.

VOGLINO, P. Le macchie brune degli astri della Cina. (*Phyllosticta Asteris* Bresadola). *Bollettino del Laboratorio Sperimentale (Regio Osservatorio Regionale) di Fitopatologia*, Torino, 1931, anno 8, n. 6, pp. 1-3.

WOLLENWEBER, H. W., und RICHTER, H. Infektionsversuche mit *Graphium ulmi* an Ulmen und anderen Laubbäumen. *Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1931, 11. Jahrg., Nr. 11, S. 89.

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